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This is a full and timely response to the Office Action mailed April 10, 2003. Reconsideration and allowance of the application and presently pending claims are respectfully requested.

Present Status of Patent Application

Upon entry of the amendments in this response, claims 12-22 remain pending in the present application. More specifically, claim 17 has been currently amended to address and overcome the Office action rejection of this claim.

Reconsideration and allowance of the application and presently pending claims are respectfully requested.

A. Allowable subject matter

The Office Action indicates that Claim 13 “would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.”

Applicant appreciates the Examiner’s indication that claim 13 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. But in view of the fact that claim 12 is allowable based on the reasons discussed below, Applicant at this time, has not re-written claim 13.

Since independent claim 12 is allowable over the prior art references of record, then dependent claim 13 is allowable as a matter of law. *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). Accordingly, Applicant requests that claim 13 be allowed.

B. Claim Rejections - 35 U.S.C. § 112

The Office Action states that claim 17 is rejected under 35 U.S.C. 112, second paragraph, as the claim is confusing.

Original claim 17 erroneously depended on independent claim 12. This error was due to “the step of providing an ionic liquid,” which is a part of original claim 17, not being present in claim 12. The step of “providing an ionic liquid,” is present in original claim 13. Consequently, Claim 17 has been amended to make claim 17 dependent on claim 13 rather than on claim 12.

Applicant requests that currently amended claim 17 be considered and placed in allowance.

C. Claim Rejections - 35 U.S.C. § 102 (e)

a) Statement of the Rejection

Claims 12, 14-15, and 17-22 have been rejected under 35 U.S.C. 102(e) as being anticipated by Brinkman (U.S. Patent US006351578B).

b) Response to the Rejection

Claim 12

Claim 12 has been rejected under 35 U.S.C. 102(e) as being anticipated by Brinkman's device that allegedly discloses "an optical system including the method of forming optical transmission comprising a substrate (445) with a waveguide channel (425), or multiple waveguides (see fig. 1A, the contour channel (see fig. 1A) with ion material and partially buried in the substrate diffusion into the substrate (col. 1, lines 44-66), the contoured channels varies in width and in height (see fig. 1A), the formation of the trench and channel by etching or other similar technique (see col. 10), the light propagating features (col. 8 of fig. 4)," (Emphasis added)

Applicant respectfully asserts that the rejection of claim 12 is improper because the Office action suggests that a method of forming Brinkman's optical transmission is inferable from a description and/or illustration of the structure of an optical system, even though Brinkman does not specifically disclose a method of forming the optical transmission. The Office Action further alleges that the Applicant's method of claim 1 reads upon Brinkman's method that is inferable from a description and/or illustration of Brinkman's optical system.

Such a rejection is contrary to well-established Federal Circuit precedent regarding the law surrounding inherent teachings. In fact, the undersigned respectfully directs the Examiner's attention to the recent decision of *Elan Pharms. v. Mayo Found. for Med. Educ. & Research*, 304 F.3d 1221 (Fed. Cir. 2002), in which the Federal Circuit reversed a finding of inherency by a district court. In this opinion, the Court of Appeals for the Federal Circuit noted:

An anticipating reference "must disclose every element of the challenged claim and enable one skilled in the art to make the anticipating subject matter." *PPG Industries, Inc. v. Guardian Industries Corp.*, 75 F.3d 1558, 1566, 37 USPQ2d 1618, 1624 (Fed. Cir. 1996). When anticipation is based on inherency of limitations not expressly disclosed in the assertedly anticipating reference, it must be shown that the undisclosed information was known to be present in the subject matter of the reference. *Continental Can*

Co. USA, Inc. v. Monsanto Co., 948 F.2d 1264, 1269, 20 USPQ2d 1746, 1749-50 (Fed. Cir. 1991). ***An inherent limitation is one that is necessarily present; invalidation based on inherency is not established by "probabilities or possibilities."*** *Scaltech, Inc. v. Retec/Tetra, LLC.*, 178 F.3d 1378, 1384, 51 USPQ2d 1055, 1059 (Fed. Cir. 1999).

This discussion by the Federal Circuit is certainly nothing new. The law surrounding the doctrine of inherency has not changed for over 60 years. In fact, the Federal Circuit has repeatedly quoted the language from the 1939 decision *Hansgird v. Kemmer*, 26 C.C.P.A. 937, 102 F.2d 212, 214, 40 U.S.P.Q. (BNA) 665, 667 (CCPA 1939)), which stated:

Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing *may* result from a given set of circumstances is not sufficient. [Citations omitted.] If, however, the disclosure is sufficient to show that the natural result flowing from the operation as taught would result in the performance of the questioned function, it seems to be well settled that the disclosure should be regarded as sufficient.

In the present situation, the Office Action has, unfortunately, substituted its own subjective judgment in place of the actual teachings of the Brinkman reference. It is clear that Brinkman fails to teach, as alleged by the Office Action, a method of forming an optical system as asserted in Applicant's claim 12.

Applicant respectfully requests that the rejection of claim 12 be withdrawn and that claim 12 be allowed.

Claims 14-15 and 17-22

Claims 14-15 and 17-22 have been rejected under 35 U.S.C. 102(e) as being anticipated by Brinkman.

Each of the claims 14-15 and 17-22 depend directly or indirectly on independent claim 12. Since independent claim 12 is allowable over the prior references of record, then dependent claims 14-15 and 17-22 are also allowable as a matter of law. *In re Fine*, 837 F. 2d 1071 (Fed. Cir. 1988)

Consequently, Applicant traverses the rejection of claims 14-15 and 17-22 and requests that claims 14-15 and 17-22 be allowed.

D. Claim Rejections - 35 U.S.C. § 103(a)

Claim 16

Claim 16 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Brinkman (U.S. Patent US006351578B) in view of Bischel ((U.S. Patent US005911018A).

To quote MPEP 706.2(j) *Contents of a 35 U.S.C. 103 Rejection*, in pertinent part:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See MPEP § 2143 - § 2143.03 for decisions pertinent to each of these criteria.
(Emphasis added)

Applicant respectfully asserts that the Office Action rejection of claim 16 under 35 U.S.C 103(a) is improper because neither Brinkman nor Bischel expressly or impliedly provide some suggestion or motivation to one of ordinary skill in the art, to modify either reference or to combine the two references. In this regard, the Office Action states in pertinent part, that "It would have been obvious at the time the invention was made to a person of ordinary skill in the art to add the taper means such as the one taught in Bischel's structure for improving the interconnection of Brinkman's device." (Emphasis added).

Applicant notes with regret that the Office Action does not indicate where a teaching or suggestion of the above-quoted motivation may be found in the cited references.

Bischel does not expressly or impliedly provide some suggestion or motivation to one of ordinary skill in the art, to modify Brinkman. Additionally, the Office action states that the taper means is taught by "Bischel's structure." In this connection, it may be relevant to point out that Applicant's claim 16 is a method claim depending on method claim 12. As explained earlier in Applicant's response to the rejection of claim 12, it is improper to suggest that a method of forming Applicant's device is inferrable from a description and/or illustration of a structure of a prior-art device.

While Bischel does not expressly or impliedly provide some suggestion or motivation to one of ordinary skill in the art, to modify Brinkman, Applicant further fails to find in Brinkman

any reference to an “interconnection,” let alone the need for “improving such an interconnection,” where such a need for improvement may be possibly interpreted as a motivation to combine.

Applicant consequently asserts that the Office Action rejection of claim 16 under 35 U.S.C 103(a) is improper because neither Brinkman nor Bischel expressly or impliedly provide some suggestion or motivation to one of ordinary skill in the art, to modify either reference or to combine the two references.

Even if such a reason were to exist, Applicant submits that the combination of the cited references fails to disclose, teach, or suggest each element in claim 16. In this connection, Applicant asserts that the Office Action rejection of claim 16 under 35 U.S.C 103(a) is improper because the proposed combination of Brinkman and Bischel do not expressly teach or suggest all of Applicant’s method claim limitations.

The Office action states in pertinent part, “Brinkman’s device discloses the aforementioned limitations, but fails to explicitly disclose the features. Bischel’s device discloses a taper (188, fig. 6) at (sic) with at least two dimensions (see col. 2); the waveguide defining the optical axis, the waveguide channel elongating along the light propagation paths (cols. 2-4).”

Applicant’s original claim 12 states:

A method for forming an optical system, said method comprising:
providing a substrate;
depositing on the substrate a first contoured channel preform of material capable of ion exchange with the substrate; and
diffusing ions from the first channel preform into the substrate to form a first waveguide channel at least a portion of which is at least partially buried in the substrate.

Applicant’s original claim 16 states:

The method of claim 12, wherein in depositing the first channel preform, the first channel preform is contoured with both a varying width and height; and
wherein in diffusing ions from the first channel preform into the substrate, the first waveguide channel at least partially buried in the substrate is formed as an *elongate, two-dimensionally tapered waveguide channel*. (Emphasis added).

The combination of Brinkman and Bischel do not properly disclose, teach or suggest, all the claim limitations of Applicant’s independent method claim 12 as well as Applicant’s dependent claim 16. The combination of Brinkman and Bischel fails to disclose, teach or suggest, at least “diffusing ions from the first channel preform into the substrate to form a first waveguide channel at least a portion of which is at least partially buried in the substrate.” The

combination also fails to at least disclose, teach or suggest, a part of Applicant's method claim 16 that includes the use of a "first contoured channel preform" to form "an elongate, two-dimensionally tapered waveguide channel."

Applicant asserts that the Office Action rejection of claim 16 under 35 U.S.C 103(a) is improper because the proposed combination of Brinkman and Bischel do not expressly or impliedly suggest all of the features/limitations recited in Applicant's claim 16.

In conclusion, Applicant respectfully asserts that the Office Action fails to establish a *prima facie* case of obviousness as it does not provide a reason to combine Brinkman with Bischel; and also does not provide in the combination of Brinkman and Bischel, a combination that expressly or impliedly suggests all of the features/limitations recited in Applicant's claim 16.

Therefore, Applicant requests that rejection of claim 16 be withdrawn, and that claim 16 be allowed.

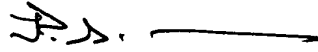
Prior Art Made of Record

The prior art made of record has been considered, but is not believed to affect the patentability of the presently pending claims.

CONCLUSION

In light of the foregoing amendments and for at least the reasons set forth above, Applicant respectfully submits that all objections and/or rejections have been traversed, rendered moot, and/or accommodated, and that claims 12-22 are in condition for allowance. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested. If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (770) 933-9500.

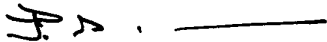
Respectfully submitted,



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